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ABSTRACT

This study analyzed the size and characteristics of monolingual and bilingual workers, using the 1992 National Adult Literacy Survey, which contains questions on English language Usage, second language usage, and language proficiencies. Interviews with a nationally representative sample of the U.S. adult population (in English or Spanish) investigated demographics, educational attainment in the United States and abroad, current labor force status and earnings, weeks worked during the prior year, and political and social participation. Results indicated that fluently English monolingual workers were the largest single grouping, though a sizable number of workers were either bilingual or more proficient in the second language. A sizable share of the labor force was monolingual, but not highly English proficient. There were notable differences between groups in distribution and outcomes within the labor market. About 75 percent of all workers were fluently English monolingual, and 6.5 percent were proficiently bilingual in English and another language. Native born workers comprised the largest population of bilingual workers. Skill in a second language, if accompanied by high English proficiency, related to higher pay and earnings. Proficient bilingual workers had the highest average wages of any language skill group. English/Spanish bilinguals and Spanish dominant workers experienced the poorest labor market outcomes, mainly due to poor education. (Contains 10 references.) (SM)

The Characteristics of Bilingual and Monolingual U.S. Workers

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English remains the preeminent language of the American workplace, but high rates of immigration and the grip of globalization create cause and incentive for a shift to the prevalence of other language abilities. Demographic trends alone dictate that the non English language abilities of the U.S. labor force will likely expand over the new century. Immigrants, primarily from non-English speaking countries, account for at least one third of net population growth, as well as a growing second generation of their descendants (NRC, 1997). Globalization generates a demand for trade in non English languages and supports transnational ties that reinforce second language retention. Since the 1970s these forces should have led to a language shift.

Yet surprisingly little is known about the distribution of language abilities among the members of the U.S. labor force. To date almost all research on English and labor force outcomes has relied on limited questions in the decennial U.S. Census. It assesses as English monolingual and perfectly fluent all persons who speak English "at home" leaving only those who speak another language at home to self assess their ability in English. It does not ask respondents to assess their ability to speak a second language other than English. In short, the Census based research cannot tell us which workers are truly monolingual in English and whether or not they speak English "very well," much less can the Census tell us which workers are functionally bilingual. Yet, the prevalence of monolingual and bilingual ability is the key marker of incipient language shifts in the U.S. labor force and all that this implies.

We know from a sizable body of the Census research, as well as from limited examples of studies based upon special surveys, that English is a key human capital asset in the U.S. labor market (Chiswick and Miller, 1992). After education and experience, English ability has been shown to be the most important determinant of immigrants' labor force earnings. Of course, because the Census measure imputes perfect fluency to those who speak English at home one wonders whether the measure captures "ability" or more prosaically another marker of cultural assimilation. One can only wonder about the labor force characteristics and outcomes of persons who speak English at home. Do all such persons have in fact fully fluent English? And what about those who are bilingually proficient, do they have the characteristics of favored workers in our diverse, global economy? The Census is mute on these questions.

This article analyses the size and characteristics of monolingual and bilingual workers according to their abilities using the 1992 National Adult Literacy Survey (NALS). The NALS has been extensively used to analyze the basic competencies of the U.S. work force.¹ This survey possesses a battery of questions on English language usage, second language usage, and language proficiencies. To our knowledge, no other national survey of U.S. adults has assessed the second language proficiencies of respondents and estimates of the size of the bilingual and second language monolingual labor force has heretofore been unavailable. These data are shown according to a fourfold taxonomy of predominantly monolingual English and second language populations, as well as for functionally bilingual, and less than fluent English monolingual populations.

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¹ See Pryor and Schaeffer, 1997; Sum, 1999.

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The NALS is a rich source of information on the language skills of the U.S. adult population and labor force. Funded by the U.S. Department of Education, it is a nationally representative sample based on interviews with 25,000 adults². Black and Hispanic adults are over sampled. The interview was conducted in person and the questionnaire was available in both English and Spanish. In addition to the language items, the survey includes copious questions on demographic background, educational attainment in the U.S. and abroad, current labor force status and earnings and weeks work during the prior year, and political and social participation.

1.1 Defining English and Second Language Fluency

Respondents to the NALS reported their proficiency in English and a second language. In contrast, the Census first asks "Does this person speak a language other than English at home?" Only if the answer is "yes" is the respondent queried on his/her ability to speak English. English language ability in the Census is thus an amalgam based on English usage at home and self assessed proficiency; because those who speak English at home are imputed to speak "very well." Unsurprisingly both the NALS and the 1990 Census suggest that about 99 percent of native born adults speak English "very well," combining those who actually self assess as speaking English "very well" and those who speak English at home.³ However, if the NALS is used to identify English ability independent of its use in the home, it finds that only about 77 percent of natives report speaking English "very well." Home use is an imperfect indicator of language fluency.

The NALS also asked respondents a series of second language items. The questions on non English language proficiency are preceded by a streaming question "What language or languages did you learn to speak before you started school? (Code all that apply) English, Spanish, Other (specify)." If only English was spoken before the start of school then only English ability is assessed and not ability in any other language. For those who learned a non English language before starting school an assessment is made of their second language ability. Those who reported more than one non English language assessed their first non English language mentioned. This is likely to lead to some understatement of the size of the labor force that is proficient in a second language. Clearly, there are a nontrivial number of English speaking children who learn a foreign language through formal foreign language instruction in U.S. schools and whose skills have not atrophied in adulthood. The estimates here of the size of the labor force that knows a foreign language should be considered a lower bound.

Finally, note that the NALS goes beyond the Census in asking about speaking ability to also assess understanding, reading, and writing ability. Prior research has established that these four abilities tap into the same underlying language construct, i.e., they variously capture the same essence, but each skill is not equally rewarded in the U.S. labor market. In fact, the ability to understand English is the most fundamental of the four to labor market outcomes and the sole significant predictor of wages in a multivariate analysis.⁴ Thus, while a study of any of the four types of language ability will generate similar conclusions, this article focuses on understanding to keep the analysis tractable and because it is the most relevant.

1.2 Classifying Dominant Language Ability

A fourfold classification of mono / bilingual abilities can be derived based upon the NALS language questions and relative abilities: the NALS asked respondents to assess their language proficiencies as "very well," "well," "not well," and "not at all." Only those workers who reported understanding English "very well" are considered to be fully fluent in English. But following

² The NALS sample we use is representative of the civilian, noninstitutional adult population. The NALS also included a comparable survey of 1,000 inmates in prisons who we exclude.

³ Carliner (2000) reports that 93.9 percent of native 18 to 64 year-olds speak only English at home. An additional 4.7 percent speak English "very well." In the NALS, 96.9 percent of similarly defined natives use English always at home, and of those that do not always use English at home an additional 1.9 percentage points speak English "very well."

⁴ See Fry, Lowell, and Carnevale (2000).

convention a lower threshold is used to measure fluency in a second language combining workers who understand their non English language "very well" along with those who understand "well."⁵ Greater leniency on the standard for second language fluency acknowledges the more fundamental link between English and the U.S. labor market, while broadening the sample of workers knowledgeable in a second language. This does not alter the thrust of the findings.

On the basis of their ability in English and another (second) language, workers are classified into one of four mutually exclusive language groups:

- (1) Fluent English monolingual (English = very well and Other < well),
- (2) Proficient bilingual (English = very well and Other $\geq$ well),
- (3) Second language dominant (English < very well and Other $\geq$ well),
- (4) Meso-lingual (English < very well and Other < well).

The first group is monolingual in English and understands "very well." The proficient bilingual group understands English "very well," as well as a second language at least "well" or better per the preceding discussion. The second language dominant group is not as capable in English, understanding it no better than "well," while understanding their second language "well" or better, e.g., this group combines imperfectly (English) bilingual workers and a very small number of workers who are proficiently monolingual in a second language. Their key similarity is the dominance of non English ability and background research found these predominantly immigrant workers are more alike than not.

The most unusual group is the residual termed "meso-lingual" with workers of varying degrees of lesser proficiency in English and/or a second language. Workers who answered affirmative to the streaming question about learning only English prior to starting school are not asked about a second language, but unlike the Census they are asked about their English ability. And native born monolinguals who report understanding English no better than "well" are the major component of the meso-lingual group. At the same time, it is easy to conceive of an immigrant who currently understands their mother tongue no better than "not well;" and if the worker also understands English no better than "well" he/she is in the meso-lingual group. The unifying characteristic of "meso-linguals" is that they do not possess the highest degree of proficiency in either English or a second language, but the group is predominantly native monolingual.

2. Language Ability Groupings by Nativity and Non-English Language

Table 1 shows the numerical breakdown of these ability groups in the U.S. labor force in 1992. Out of a total of 132 million workers, 77 percent are fluent English monolinguals while an additional 6.5 percent are proficient bilinguals: taken together 83 percent of workers possess fluent English understanding making it the predominant language ability of U.S. workers. Indeed, second language ability is dominant for only 5.5 percent of workers. At the other extreme, 12 percent of workers neither understand English no better than "well" nor a second language "well." This latter group with imperfectly fluent English or second language ability encompasses fully 15 million workers and is one of the more surprising findings of this study.

⁵ Portes and Hao (1998) employ the identical classification scheme in their study of bilingualism among second generation youth.

Table 1

Language Skills of the U.S. Labor Force, 1992

	Total Labor Force (in millions) %		Native-born (in millions) %		Foreign-born (in millions) %	
Fluent English monolingual	101.1	76.5	98.7	82.8	2.3	17.9
Proficient bilingual	8.6	6.5	4.7	3.9	3.9	30.1
2nd language dominant	7.3	5.5	0.9	0.8	6.4	48.8
Meso-lingual	15.2	11.5	14.8	12.4	0.4	3.2
ALL	132.3	100.0	119.1	100.0	13.0	100.0
Second Language						
Proficient Asian bilingual	0.5	0*	0.1	0*	0.4	3.1
Asian dominant	0.7	0.5	0*	0*	0.6	4.9
Proficient European bilingual	2.5	1.9	1.5	1.3	1.0	7.9
European dominant	0.8	0.6	0.1	0*	0.7	5.3
Proficient Spanish bilingual	4.1	3.1	2.7	2.2	1.4	10.8
Spanish dominant	5.1	3.9	0.8	0.6	4.4	33.5
Proficient other nonEnglish bilin	1.5	1.2	0.5	0*	1.1	8.4
other nonEnglish dominant	0.7	0.5	0.1	0*	0.7	5.1
Subtotal	15.9	12.0	5.6	4.7	10.3	78.9

Source: National Adult Literacy Survey

Notes: Numbers less than 50,000 are rounded to zero. Percentages less than 0.5 are rounded to zero.

Of course, it should be expected that immigration drives much of today's linguistic shifts and Table 1 shows the four language ability groups by nativity. Obviously, the English monolingual labor force is overwhelming native born (98 percent). And though the foreign born are much more likely to be proficient bilinguals than natives (30 percent versus 4 percent), native bilinguals (4.7 million) outnumber immigrant bilinguals (3.9 million). Second language dominants are overwhelmingly foreign born (88 percent) and about half of the foreign born are proficient in a second language but understands English imperfectly. Note that meso-lingual workers are predominantly natives (97 percent) highlighting a hitherto unknown flaw in Census data. Whereas these meso-linguals are assigned by the Census to full fluency, this analysis reveals the fact that a sizable (13.2 percent) share of natives does not understand English "very well" being less than fluent by this measure.

The bottom portion of Table 1 goes on to detail the major second language groupings among workers who are either proficient bilinguals or whose abilities are dominantly in a language other than English. A total of 15.9 million workers have second language proficiency with Spanish being the single largest non English language ability (9.2 million or 58 percent of second language proficient workers). But while this is the dominant non English language ability, only 7 percent of all U.S. workers are proficient in Spanish. Participants knowing a European language are the second largest foreign language grouping, comprising 3.3 million participants (21 percent of second language proficient workers but just 2.5 percent of U.S. workers). Asian and all other language types together comprise the balance of non-English language abilities in the U.S. labor force.⁶

Table 2 further portrays the major non English language abilities arrayed by major states for which NALS data is available.⁷ Spanish as the most prevalent non-English ability is further concentrated in the states of Texas and California where close to 20 percent of these states' workers

⁶ Individual language ability in order of prevalence is Spanish, Italian, French, German, Portuguese, Polish, Greek, Korean, Vietnamese, and Chinese (not shown in table).

⁷ Eleven states elected to conduct their own companion NALS literacy survey including the six states with the largest labor forces. Small sample sizes for the balance of 39 states preclude a state level analysis.

have Spanish proficiency. Nearly one quarter of both California and Texas' labor forces are fluent in a foreign language. Otherwise, only European language ability attains notable shares of the workforces, e.g., between 4 and 5 percent in New York and Pennsylvania. Asian language ability nowhere comprises more than 2 percent of these states' workforces. One can infer from Table 2 that Texas is the leading bilingual state with 13 percent of its labor force understanding both English and another language. California is the leading state with the least knowledge of English: about 22 percent of California labor force participants do not know English "very well."

Table 2

Language Skills of the Labor Force, Six Largest States, 1992

State	Total Labor Force	Fluent English	Asian		European		Spanish		other nonEnglish		Meso-lingua
		Monolingual	Proficient Bilingual	Dominant	Proficient Bilingual	Dominant	Proficient Bilingual	Dominant	Proficient Bilingual	Dominant	
In thousands											
CALIFORNIA	16,530	11,210	155	126	229	0*	890	1,941	386	203	1,353
TEXAS	9,080	6,068	67	53	51	0*	952	860	73	68	873
NEW YORK	9,046	6,372	0*	105	398	127	464	583	150	74	713
PENNSYLVANIA	6,043	4,824	0*	0*	183	0*	0*	0*	62	0*	878
ILLINOIS	5,938	4,527	0*	0*	108	0*	113	306	72	0*	703
OHIO	5,626	4,716	0*	0*	62	0*	0*	0*	0*	0*	755
In percent											
CALIFORNIA	100	68	1	1	1	0*	5	12	2	1	8
TEXAS	100	67	1	1	1	0*	10	9	1	1	10
NEW YORK	100	70	0*	1	4	1	5	6	2	1	8
PENNSYLVANIA	100	80	0*	0*	3	1	0*	0*	1	0*	15
ILLINOIS	100	76	0*	0*	2	1	2	5	1	1	12
OHIO	100	84	0*	0*	1	0*	0*	0*	0*	0*	13

Source: National Adult Literacy Survey.

Notes: Numbers less than 50,000 are rounded to zero. Percentages less than 0.5 are rounded to zero.

3. The Characteristics of Language Ability Groupings

The NALS also permits the examination of the characteristics of workers in the four ability groups along a number of dimensions not portrayed up until now. Table 3 presents a variety of demographic and economic characteristics that demonstrate strong variation by ability grouping and suggestive reasons for their relative labor market position. As already reviewed, almost all fluent English monolinguals but also a simple majority of proficient bilinguals are native born; and workers who are second language dominant are overwhelmingly foreign born. Interestingly, women are under represented in both second language dominant and meso-lingual groups, perhaps reflecting the putative greater linguistic facility of women especially in the case of the meso-lingual group. Women of the second language dominant group are likely to be immigrants and may have the lower labor force participation rates of the female foreign born.

Table 3

Average Demographic and Economic Characteristics of the U.S. Labor Force, 1992

Characteristic	All	Fluent English Monolingual	Proficient Bilingual	2nd Language Dominant	Meso- lingual
Total Labor Force (in 1,000s)	132,300	101,100	8,623	7,287	15,240
Native-born (in %)	90.2	97.7	54.5	12.8	97.3
Female (in %)	46	48	44	37	35
Age (in years)	37.6	37.5	37.8	36.7	38.6
Metropolitan residence (in %)	78	77	90	93	68
Census region (in %)					
Northeast	20	20	27.7	21.1	15.3
Midwest	23.4	24.3	13.6	8.7	30
South	34.4	35.1	27.6	28.1	36.7
West	22.2	20.6	31.2	42.1	17.8
	100	100	100	100	100
Race/ethnicity (in %)					
Hispanic					
Mexican	5.5	1.7	23.6	42.9	2.6
NonMexican	4	1.3	23.1	25.8	0.9
NonHispanic					
Asian/Pacific Islander	2.2	0.8	11.8	13.8	0.5
Black	10.7	11.4	3	2.8	14.2
White	76.1	83.8	33.6	11.3	80.2
Other race	1.5	1	4.9	3.4	1.6
	100	100	100	100	100
Highest education (in %)					
less than 6th grade	1.9	0.6	2.5	20.1	2
6th grade to less than H.S./GED	17.2	14.4	17.2	35.8	27
H.S./GED	32.4	32.1	25.6	21.4	43.1
Some college	27	28.9	26.5	13.4	21.4
College graduate	21.5	24	28.3	9.4	6.4
	100	100	100	100	100
Quantitative skill level (scale 0 to 500)	285	296	275	181	262
Poverty and welfare status (in %)					
Poor or near poor	14.6	12.3	14.1	38.5	20.7
Family received AFDC or public welfare	5.2	4.8	5.3	6.6	7.8
Health condition and disability status (in %)					
Physical, mental, or other health condition	5.0	4.8	3.1	3.3	8.2
Hearing difficulty	5.3	4.4	2.7	2.9	13.3
Learning disability	2.8	2.1	1.8	3.5	7.2

Source: National Adult Literacy Survey

Notes: "Quantitative skill level" refers to respondent's performance on an assessment of functional math skills. "Physical, mental, or other health condition" refers to self-reported response as to whether "have any health problem, impairment, or disability now that keeps you from participating fully in work, school, housework, or other activities."

In a similar fashion, the strong concentration in metropolitan areas of proficient bilinguals and second language dominants may reflect the penchant of immigrants in these groups to live like most foreign born in urban areas. Otherwise, the regional distribution of these workers once again appears to reflect an underlying distribution of first and second generation immigrant stock. For example, the fluent English monolingual group is distributed pretty much like the workforce at large. On the other hand, the proficient bilingual and second language dominant groups are found more in the Northeast and the West. Curiously, the predominantly native meso-lingual group is found concentrated in the Midwest and the South.

As to their ethnic and racial identification, most fluent English monolingual workers (85 percent) self identify themselves as non Hispanic white. In contrast and in line with the prevalence of second language ability, proficient bilingual and second language dominant workers are disproportionately Hispanic and Asian. Still, one third of proficient bilinguals are white workers. Within the Hispanic classification it can be seen that Mexicans in particular dominate the group of second language dominant workers with more than 42 percent of this ability group being of Mexican origin. Meso-linguals are mostly non Hispanic white (80 percent) and black (14 percent) reflecting their native born origins.

Relative to fluent English monolingual workers, proficient bilingual workers veer toward educational extremes: a slightly greater proportion has not completed high school and a greater proportion has finished college. Second language dominant workers are clearly the most educationally disadvantaged and 56 percent have not completed high school; nearly 20 percent have not completed the sixth grade. Though meso-linguals are not as educationally disadvantaged, their educational deficits are severe nonetheless and about 30 percent have not completed a high school education. The story told by school completion is retold in a measure of quantitative skill levels derived from a battery of survey questions on day to day arithmetic calculations.⁸ Fluent English monolinguals have the highest quantitative scores, while both proficient bilingual and meso-linguals have progressively lower numerical scores. Second language dominant workers have the lowest score of the four language ability groups (the least skilled tenth of the labor force).

The educational and English language abilities of these four groups are strongly related to family income status. Both fluent English monolingual and proficient bilingual workers experience poverty rates that are close to the national average, while nearly 40 percent of second language dominant workers are poor or near poor (2.6 times the national average).⁹ Likewise, 21 percent of meso-lingual workers are poor or near poor (1.4 times the national average). Nonetheless, even while the second language dominant and meso-lingual workers are disproportionately found in low income households, their families do not receive public means-tested transfer benefits at inordinately higher rates. For example, the receipt of means tested transfers by the families of second language dominant workers is only modestly above the national average.

For the most part there do not appear to be marked contrasts among participants in self-reported health status. The NALS asked a variety of questions on current disabilities, visual or hearing difficulties, and health problems that kept the participant from fully participating in major activities. Workers who know a second language generally reported the occurrence of poor health conditions at rates similar or even lower than the national average. Meso-lingual workers are the only language group that self-reported a markedly higher incidence of health conditions. In particular, 13 percent report a hearing difficulty which certainly helps explain why these workers report difficulty in understanding the spoken English language, but it in no wise can explain the far greater balance of the meso-lingual group's poor English ability.

⁸ The index is derived from questions such as balancing a checkbook or computing a restaurant tip. The quantitative score is on a scale of 0 to 500 with an estimated standard error of less than 1. Note that the test booklet that is used to assess the functional numeracy skills of the respondents was only given in English (whereas Spanish was otherwise used throughout the questionnaire). This may introduce some downward bias for the second language dominant group.

⁹ NALS respondents were asked to report the number of persons residing in their household as well as their family's total income from all sources during the previous calendar year. On the basis of federal poverty guidelines, individuals were classified as either poor or near poor.

4. Labor Market Status and Wages of Language Groups

Table 4 turns to an examination of the labor market status of the four groups. About 68 percent of all labor force participants were employed full time and the greatest variation in attachment comes in unemployment. Fluent English monolinguals experience lower unemployment than other language groups and slightly higher rates of part time employment. Their greater success in securing employment is reflected in a greater average number of weeks worked in the year preceding the interview: fluent English monolingual workers averaged about 43 weeks worked in comparison to 41 weeks or less for others.

Table 4

Average Labor Market Characteristics of the U.S. Labor Force, 1992

Characteristic	All	Fluent English Monolingual	Proficient Bilingual	2nd Language Dominant	Meso- lingual
Current Labor Force Status (in %)					
Employed full time	67.8	68	67.8	68	66.9
Employed part time	17.8	18.6	16.1	14.9	15.2
With a job, but not at work	4.1	4	3.9	4.1	4.4
Unemployed	10.3	9.4	12.2	13	13.5
	100	100	100	100	100
Weeks worked in the past 12 months	42	43	41	40	41
Annual earnings (in \$)	22,003	22,865	24,709	14,618	18,099
Average weekly wage (in \$)	455	471	513	316	376
Average weekly wage distribution					
10th percentile	100	100	120	105	100
25th percentile	200	200	212	175	180
Median	349	350	360	250	300
75th percentile	592	600	600	346	500
90th percentile	888	914	1,000	530	723

Source: National Adult Literacy Survey

But the greater labor force attachment of fluent English monolinguals is not reflected in superior earnings across the board. In fact, proficient bilingual workers have the highest average annual earnings and weekly wages of any language group. Given the large fraction of highly educated among the proficient bilingual labor force, it is perhaps not surprising that the average for this group is high. Then again, the level of earnings among the upper 90th percentile of proficient bilinguals is higher than for other groups. Perhaps, this subset of bilingual workers has jobs in which their dual language skills are particularly rewarded, although these results primarily tell us that English ability is key to the highest wages.¹⁰ Meso-linguals and especially second language dominant workers receive the lowest earnings and weekly wages: second language dominant workers are paid \$10,000 less per year than proficient bilingual workers and their weekly wages are 40 percent lower. In fact, three quarters of second language dominant workers are paid below \$350 per week, the median wage for the whole labor force.

¹⁰ On average however, research finds that the bilingual earnings advantage disappears after introducing multivariate controls for education and experience (see Fry and Lowell, 2002).

There is, however, as Table 5 shows, a considerable diversity in wages among workers who understand a second language depending on which language. Not all second language dominant workers earn below average wages. The average wage for European language dominant workers (\$452 per week) is similar to the average for fluent English monolingual workers (\$471 per week). And again proficient bilingual workers tend to be paid more than their English monolingual counterparts: Asian, European, and other language bilinguals received average wages of \$838, \$632, and \$576. It is the English/Spanish bilingual and the Spanish dominant worker who earns the least: bilinguals earn wages of \$370 per week and dominants only \$275. The low wage of Spanish bilinguals and dominants is certainly associated with their low levels of education. Proficient Spanish bilinguals, for example, are 48 percent of the U.S. bilingual labor force, but they are 64 percent of all bilinguals who have not completed high school. Otherwise, the most prevalent non English language in the United States is apparently the least prized by its labor market.

Table 5

Average Weekly Wages by Language Skills, 1992 (in \$)

Language Skill	Wage
English monolingual	471 (4)
Proficient Asian bilingual	838 (154)
Asian dominant	397 (51)
Proficient European bilingual	632 (31)
European dominant	452 (70)
Proficient Spanish bilingual	370 (12)
Spanish dominant	275 (9)
Proficient other nonEnglish bilingual	576 (46)
other nonEnglish dominant	410 (99)
Meso-lingual	376 (7)

Source: National Adult Literacy Survey

Notes: Standard error of the mean in parentheses.

5. Sector of Work and Language Ability Groups

Table 6 turns to a presentation of the industrial affiliation of U.S. workers and demonstrates significant differences in concentration by language ability. Workers who are fluent English monolinguals tend to work disproportionately in finance, insurance, and real estate; public administration; and the largest sector, services industries. Proficient bilingual workers are distributed across industries in similar fashion to English monolinguals. They eschew the goods producing industries and tend to be disproportionately found in public administration; and finance, insurance, and real estate. Unlike English monolinguals, proficient bilingual workers have a strong representation in wholesale and retail trade. Workers who are second language dominant labor are found disproportionately in farm, forestry, and fishing; manufacturing; and wholesale and retail trade. Meso-lingual workers work disproportionately in the nation's goods producing industries of farm, forestry, and fishing; construction; mining; and manufacturing.

Table 6

Language Skills of Labor Force Participants by Major Industry

Industry	All		English Monolingual		Proficient Bilingual		2nd Language Dominant		Meso-lingual	
	(in 1,000s)	%	(in 1,000s)	%	(in 1,000s)	%	(in 1,000s)	%	(in 1,000s)	%
Construction, mining	8,560	6.5	6,107	6.0	480	5.6	514	7.1	1,459	9.6
Farm, forestry, & fishing	3,555	2.7	2,329	2.3	70	0.8	472	6.5	684	4.5
Finance, insurance, real estate	7,248	5.5	6,081	6.0	489	5.7	167	2.3	509	3.3
Manufacturing	22,310	16.9	16,100	15.9	1,288	14.9	1,879	25.8	3,041	20.0
Public administration	5,347	4.0	4,400	4.4	377	4.4	132	1.8	437	2.9
Services	44,270	33.5	35,320	34.9	2,941	34.1	1,899	26.1	4,112	27.0
Trade	26,540	20.1	20,060	19.8	1,982	23.0	1,634	22.4	2,858	18.8
Transportation, communications, & p	8,978	6.8	6,915	6.8	467	5.4	333	4.6	1,264	8.3
unknown	5,449	4.1	3,788	3.8	527	6.1	257	3.5	877	5.8
ALL	132,300	100.0	101,100	100.0	8,623	100.0	7,287	100.0	15,240	100.0

Source: National Adult Literacy Survey

Table 7 suggests that knowledge of English is strongly associated with entry into the higher skilled occupations.¹¹ Workers who know English (both fluent English monolinguals and proficient bilinguals) are found disproportionately in professional, executive, manager, administration, and technical careers. Proficient bilingual workers particularly gravitate to technical occupations. Opposed to this, workers with poor English ability are heavily concentrated in less skilled occupations. Both workers who are second language dominant, as well as workers of meso-lingual ability, are found disproportionately in services, laborer, and assembling occupations.

¹¹ Occupations vary substantively in their skill and numeracy requirements. Professionals, executives, managers, and administrators, and technical workers tend to have the highest quantitative skills. Assembler, fabricator, and operators, laborers and helpers, and farm, forestry, and fishing workers have substantially lower skill requirements (Sum, 1999).

Table 7

Language Skills of Labor Force Participants by Occupation

Occupation	All (in 1,000s) %		English Monolingual (in 1,000s) %		Proficient Bilingual (in 1,000s) %		2nd Language Dominant (in 1,000s) %		Meso-lingual (in 1,000s) %	
Administrative support	20,560	15.5	16,970	16.8	1,308	15.2	527	7.2	1,750	11.5
Assembler, fabricator, operator	8,759	6.6	5,656	5.6	489	5.7	1,221	16.8	1,393	9.1
Craft, precision production	14,220	10.8	10,160	10.1	650	7.5	900	12.4	2,517	16.5
Executive, manager, administrator	9,973	7.5	8,558	8.5	647	7.5	146	2	622	4.1
Farm, forestry, fishing	3,751	2.8	2,325	2.3	142	1.7	564	7.7	719	4.7
Laborer, helper, cleaner	6,576	5.0	4,255	4.2	373	4.3	770	10.6	1,178	7.7
Professional	17,800	13.5	15,320	15.2	1,517	17.6	236	3.2	723	4.7
Sales	14,930	11.3	12,080	11.9	1,172	13.6	498	6.8	1,180	7.7
Services	22,220	16.8	16,060	15.9	1,271	14.7	1,729	23.7	3,160	20.7
Technical	4,588	3.5	3,652	3.6	406	4.7	150	2.1	380	2.5
Transport operative	5,021	3.8	3,531	3.5	264	3.1	333	4.6	893	5.9
unknown	3,862	2.9	2,538	2.5	383	4.4	214	2.9	728	4.8
Total	132,300	100.0	101,100	100.0	8,623	100.0	7,287	100.0	15,240	100.0

Source: National Adult Literacy Survey

6. Conclusions

This article yields a first statistically representative portrait of the prevalence of English and second language abilities of U.S. workers. Unsurprisingly, fluently English monolingual workers remain the largest single grouping, but a sizable share of the labor force is either bilingual or actually more proficient in a second language. Surprisingly, and hitherto unknowable from Census data, a sizable share of the labor force is found to be monolingual but not highly proficient in English. There are notable differences between these groups in their distribution and outcomes within the labor market.

Seventy five percent of all workers are fluently English monolingual, while an additional 6.5 percent is proficiently bilingual in both English and a second language. While immigrants are disproportionately likely to be bilingual, native born workers comprise the largest population of bilingual workers. A significant number of U.S. workers report that they do not understand spoken English "very well": 17 percent of the U.S. labor force reports understanding English no better than "well." Less than one third of such workers also report understanding a second language with any proficiency. And most of the over 15 million workers who report either poor English and/or second language ability, "meso-linguals," are overwhelmingly native born and educated in U.S. schools. It is not known whether these workers are the product of poor education or environs, peripheral linguistic/dialect subpopulations coupled with reporting error, or the lower end of a distribution of language skills that is generated by natural processes.

Skill in a second language, if accompanied by high proficiency in English, is associated with higher pay and earnings. In fact, proficient bilingual workers have the highest average wages of any language skill group. Regardless of their skills in a second language, workers who lack high proficiency in understanding English tend to be disadvantaged in the labor market and poorly rewarded. Workers lacking English fluency are disproportionately among the least educated participants and are much more likely to be in poor or near poor households. Their lower skills are associated with higher unemployment rates and below average wages. Participants lacking high English proficiency are much less likely to hold managerial, professional, or technical jobs. Both English/Spanish bilinguals or Spanish dominant workers experience the poorest labor market

outcomes and they number about 9.2 million. Poor education appears to be the main reason for the groups poor showing.

TEXT BOX

Employment Opportunities Diminishing for Workers Lacking English

Fixed weight projections indicate strong future demand for English proficient workers and particularly proficient bilingual workers. Demand for workers with second language ability, but poor English, is likely to decline sharply along with demand for any worker who has poor language skills in any language.

These projections build upon the U.S. Bureau of Labor Statistics' estimates of changes in occupational employment from 1998 to 2008 (Braddock, 1999). For example, the percentage growth in the share of employment in professional jobs is about 11 percent (from 14 percent of employment in 1998 to 16 percent of employment in 2008). Opposed to this, the relative employment share of farm, forestry, fishing, and related workers is estimated to decline by 13 percent. This information can be used together with tabulations from the NALS on the distribution of language abilities by occupation, i.e., to create a fixed-weight measure of projected change in demand based on occupational structure (see e.g., Bound and Holzer, 1993).

The demand index is simply a weighted average of occupational growth, where occupations that have heavy importance to a group of language workers are given more weight. Our calculated demand index is as follows:

Fluent English monolingual	0.6
Proficient bilingual	1.1
Second language dominant	-2.1
Meso-lingual	-1.5

Larger values of the demand index reveal that the projected changes in the occupational structure of the economy tend to favor workers that know English. The share of employment in occupations that heavily utilize second language dominant workers and meso-linguals is projected to decline. For example, the BLS projects the strongest growth in professional and technical occupations and occupations that presently prefer workers fluent in English. Employment in farm jobs and craft and precision production are projected to experience the greatest decline in employment share, and these are occupations currently favoring less-skilled workers that lack English.

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